How to Lease an Energy-Efficient Beverage Vending Machine

Energy Efficiency and Renewable Energy
Federal Energy Management Program

Why Agencies Should Buy Efficient Products

- *Executive Order 13123 and FAR section 23.704 direct agencies to purchase products in the upper 25% of energy efficiency, including all models that qualify for the EPA/DOE* ENERGY STAR® *product labeling program.*
- *Agencies that use these guidelines to buy efficient products can realize substantial operating cost savings and help prevent pollution.*
- *As the world's largest consumer, the federal government can help "pull" the entire U.S. market towards greater energy efficiency, while saving taxpayer dollars.*

For More Information:

- DOE's Federal Energy Management Program (FEMP) Help Desk and World Wide Web site have up-to-date information on energy-efficient federal procurement, including the latest versions of these recommendations.
  Phone: (800) 363-3732
  www.eere.energy.gov/femp/procurement
- ENERGY STAR® has an online list of products that meet this recommendation.
  Phone: (800) 363-3732
  www.energystar.gov/products
- Lawrence Berkeley National Laboratory provided supporting analysis for this recommendation.
  Phone: (202) 646-7950
- The California Energy Commission collects data on energy use in vending machines and other commercial appliances and equipment. This database is available at:
  Phone: (916) 654-4058
  http://www.energy.ca.gov/appliances/appliance/excel_based_files/

Efficiency Recommendation

Capacity	Recommended kWh/day[a,b]	Best Available kWh/day[c]
401 to 500 cans	7.2 or less	-
501 to 600 cans	7.7 or less	5.7
601 to 700 cans	8.2 or less	6.0
701 to 800 cans	8.7 or less	6.7
801 to 900 cans	9.2 or less	7.5

a) Maximum kWh/day is shown for the most common machine capacities. For machines with other rated capacities use this formula: Y = 0.55[8.66+(0.009*C)], where Y = kWh/day and C = capacity.

b) Energy use based on the Canadian standard test procedure CAN/CSA 804-96 (ASHRAE Standard 32.1-1997).

c) From the June 2003 California Energy Commission database. Note that this was the best data at the time and that more efficient products may now be available.

Definitions

Capacity is the number of 12 ounce cans a machine is rated to hold. Please note that while actual number held is reduced for machines vending larger products (i.e., 20 ounce plastic bottles), the rated capacity remains the same.

Why Lease an Energy-Efficient Beverage Vending Machine?

When your agency initiates or renews a vending machine agreement, you should require the beverage distributor to use energy-efficient models with the ENERGY STAR label (see "For More Information"). While the distributor may provide machines at no charge, your agency pays for the energy to operate them. Some machines use up to 16 kilowatt-hours of electricity per day, which can result in your agency paying $350 per year in operating costs.

Manufacturers are now incorporating efficient fans, compressors and lighting into their products. In addition, controls are being added that shut off lighting and allow the beverage temperature to rise slightly during periods of prolonged inactivity. These improvements reduce energy use and operating cost between 30 and 50%.

Even though your agency may lease rather than purchase vending machines, your agreement can require the

beverage distributor to place ENERGY STAR labeled models in your facility. A vending machine with the ENERGY STAR label meets the performance recommendations shown in the table and has controls that reduce lighting and cooling energy use at night, on weekends or other unoccupied periods. Direct the vendor to enable the lighting and refrigeration low-power state. However, do not use the cooling setback if the vending machine has dairy products, fresh juices or other items that can spoil without constant refrigeration.

User Tips

Some federal agencies or facilities may have agreements that cannot be changed for several years. In these cases, ask the distributor if VendingMisers or other external control devices can be connected to the beverage machines. These devices use motion sensors to power down the vending machines when the area surrounding them is unoccupied for several hours. If the machines are incompatible with these control devices, ask the distributor to remove the light bulbs or disconnect the lighting.

Beverage Vending Machine Cost-Effectiveness Example (501 to 600 Can Capacity)

Performance	Base Model[a]	Recommended Level	Best Available
kilowatt-hours/day	11.1	7.7	5.7
Annual Energy Use[b]	4,052 kWh	2,810 kWh	2,089 kWh
Annual Energy Cost	$243	$170	$125
Five Year Energy Cost	$1,055	$740	$545
Five Year Energy Cost Savings	-	**$315**	**$510**

a) Based on field measurements of 2002 model vending machine.

b) Does not include savings from control features. With low-power control feature enabled, vending machine energy use will be less in facilities with long, unoccupied periods.

Definition

Five Year Energy Cost is the sum of the discounted value of annual energy costs based on average usage and an assumed beverage vending machine lease of 5 years. Future electricity price trends and a discount rate of 3.0% are based on federal guidelines (effective from April, 2003 to March, 2004).

Cost-Effectiveness Assumptions

Annual energy use in this example is based on a 550 can machine operating 24 hours per day, 365 days per year. The assumed price for electricity is $0.06 per kilowatt-hour (kWh), the average for federal facilities.

Using the Cost-Effectiveness Table

In the example shown above the federal agency will save approximately $315 over five years, $510 if the "Best Available" machine is installed. There is no direct cost to the agency from requiring the more efficient machine; however, the beverage distributor may pay more for the better model. Some federal agencies have agreements with beverage distributors in which they receive a percentage of the vending machine's revenue. The distributor may wish to revise the percentage to reflect their additional costs. Federal agencies can use this table to help them decide whether to reduce their share of the revenue, which is offset by lower electric bills, or agree to a price increase for each beverage sold.

What if my Electricity Price is different?

To calculate Lifetime Energy Cost Savings for a different electricity price, multiply the savings in the above table by this ratio: $\left(\frac{Your\ price\ in\ ¢/kWh}{6.0\ ¢/kWh}\right)$.

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